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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Motoki Hiraoka

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1792

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/530,516	Applicant(s) HIRAOKA ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment of June 24, 2009 has been received and entered. With the entry of the amendment, claims 4 and 8 are canceled, and claims 1-3, 5-7 and 9 are pending for examination.

Claim Rejections - 35 USC § 112

2. The rejection of claims 1-3, 5-7 and 9 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn due to the removal of the word "dissolved" in claims 1 and 5 by the amendment of June 24, 2009.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under

37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogisu et al (Japan 08-092752, hereinafter Ogisu) in view of Harada et al (Japan 01-092377, hereinafter Harada), Hattori et al (Japan 11-244360, hereinafter Hattori) and Inoue (Japan 55-145620, hereinafter Inoue).

Claims 1, 5: Ogisu teaches a method for pretreating before electroless plating. Paragraph [0007]. A resin material is placed in contact with a first solution with the first solution containing ozone. Paragraphs [0007], [0014]. The first solution is described as an aqueous solution with the ozone dissolved in the water. Paragraphs [0007] and [0022]. After treatment with the ozone solution, electroless plating occurs. Paragraph [0007].

Ogisu does not teach the limitations (1) that the contacting step is done while irradiating the resin material with ultraviolet rays or (2) that the first solution contains ozone in an organic or inorganic polar solvent other than water of the listed materials.

Regarding the first limitation, while Ogisu does not teach the irradiating step while contacting the ozone solution, however, Ogisu does teach in paragraphs [0012]-[0015] that the ozone treating step helps surface reforming and oxidation with the etching step to provide a recessed roughened surface that helps adsorb catalyst.

Harada teaches that it is known to oxidize and roughen a substrate using gaseous ozone before electroless plating (abstract and paragraphs [0006]--[0007]); and Harada further teaches that this process is accelerated by doing so while exposing the member to ultraviolet radiation, particularly at 253.7 nm, by helping to generate activated oxygen with strong oxidizability (paragraph [0007]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ogisu to irradiate the resin material with ultraviolet rays while the resin material is in contact with the ozone as taught by Harada in order to accelerate the surface reforming and oxidation step.

Regarding the second limitation, while Ogisu teaches using ozone dissolved in water as the first solution, Ogisu does teach in paragraphs [0012]-[0015] that the ozone treating step helps surface reforming and oxidation with the etching step to provide a recessed roughened surface that helps adsorb catalyst. Thus, oxidizing of the polymer surface from the ozone solution is desired. Hattori teaches that by further providing an organic solvent, such as alcohol, for example, ethanol, with water in an ozone containing solution its oxidative powers are increased for use in treating polymers (see the Abstract and paragraphs [0004] – [0005], [0007], [0012], [0025]). Paragraph [0012] and Figure 1 of Hattori notes that when ethanol concentration is more than 10 volume % the solubility of ozone increases over that of water alone and this ozone level corresponds to oxidizing power. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ogisu in view of

Harada to further provide organic alcohol, such as ethanol (an organic polar solvent) in a concentration of more than 10 volume % to increase the solubility (dissolvability) of the ozone and increase the oxidizing power of the solution as taught by Hattori in order to accelerate and increase the surface reforming and oxidation step. As worded in the claim, the presence of this ethanol would provide that at least some of the ozone would dissolve in the ethanol that is present, due to its solubility in ethanol, and therefore, even if water is also present, a solution containing ozone dissolved in a organic polar solvent that is not water would be provided. Moreover, it is also the Examiner's position that it would have been obvious from the teaching of Hattori to perform routine experimentation to optimize the amount of ethanol used, up to 100 volume % (all ethanol/no water) to provide the optimum oxidation ability given the teaching of Hattori of increasing ozone solubility with increasing percentage of ethanol, showing that the amount of ethanol is a result effective variable, and "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Furthermore, Inoue teaches that conventional use of either ethanol or methanol as an alcohol used to provide a oxidizing agent with ozone (abstract). It further would have been obvious to modify Ogisu in view of Harada and Hattori to use methanol as to the organic alcohol instead of ethanol as suggested by Inoue with an expectation of similar results because Hattori teaches to use an organic alcohol solvent, exemplifying ethanol, and Inoue teaches that methanol would be an

organic alcohol used for a similar purpose and with an expectation of similar results as ethanol for providing an ozone containing solution.

Although applicant asserts unexpected results summarized in Table 1 of the specification, these results are not commensurate in scope with these claims to show that the results occur over the entire claimed range (see MPEP 716.02(d)). For example (1) applicant's table provides one example of nitric acid (and does not say how much/strength is used -- i.e. is the solution 100% nitric acid, 60% nitric acid/40% water, etc.) and one example of ethanol (and does not say if this is entirely ethanol), while applicant's claims claim a specific list of organic or inorganic polar solvents (that does not include ethanol) with no indication that the same results will occur for every inorganic/organic solvent listed; (2) applicant claims a resin material in general can be treated, but only uses an ABS substrate in the examples, with no indication that the same results will occur for every resin.

Claim 9: Ogisu teaches that after the electroless plating step, the resin material can be subjected to electroplating. Paragraphs [0010], [0016].

6. Claims 2, 3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogisu in view of Harada, Hattori and Inoue as applied to claims 1, 5 and 9 above, and further in view of Asakura et al (Japan 10-088361, hereinafter Asakura).

Ogisu in view of Harada, Hattori and Inoue teach all the features of these claims except the second solution with the alkaline/nonionic surface active agent components.

Asakura teaches that ultraviolet radiation treatment of a resin before electroless plating helps increase adhesion of the plating, by helping to oxidize and degrade the surface of the polymer (paragraphs [0006]--[0008]); as to the wavelength used Asakura teaches that it varies depending on the material of the polymer substrate and can be 200-400 nm, and in the case of polystyrene or ABS resin, for example, can be 160-400 nm (paragraph [0007]). Asakura teaches the desire to further bring the resin material, after the UV treatment into contact with a second solution with an alkaline component and a nonionic surfactant to help provide the high adhesion of the plating layer (paragraphs [0005]--[0006] and [0011]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ogisu in view of Harada, Hattori and Inoue to further specifically treat the resin substrate after the ozone/UV treatment with a second solution with an alkaline component and a nonionic surfactant as taught by Asakura to help provide desirable high adhesion of the plating layer.

Response to Arguments

7. Applicant's arguments with respect to claims 1-3, 5-7 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Inoue (Japan 55-145620) has been provided as discussed in the rejection above as to the specific use of one of the claimed organic solvents, methanol. Applicant argues that Hattori does not disclose or suggest using any of the claimed listed organic/inorganic polar solvents other than water. The Examiner does note, however,

that Hattori teaches the general use of organic alcohols see paragraphs [0004], [0025], with the example of ethanol, and Inoue has now been provided as to the use of methanol. Applicant also argues that Hattori teaches the ozone solution only as a treating fluid for sterilization and deodorization of natural rubber products or oxidative degeneration of organic waste fluid, and does not suggest using it for electroless plating. The Examiner notes that Hattori is not taught for use in electroless plating. However, as noted in the rejection above, Ogisu (which does provide ozone treatment for electroless plating) indicates the oxidizing of the polymer surface from the ozone solution is described, and Hattori is provided as noting the increased oxidative powers for an ozone containing solution when organic alcohol solvent, such as ethanol, is used as part of the solution. Therefore, while Hattori is not in the field of electroless plating, it would have addressed a problem addressed in that art (as shown by Ogisu) of desiring oxidative power to create a roughened surface of a substrate, by showing improved oxidative results. As noted in MPEP 2141.01(a) (I):

“Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed.” KSR International Co. v. Teleflex Inc., 550 U.S. ___, ___, 82 USPQ2d 1385, 1397 (2007). Thus a reference in a field different from that of applicant’s endeavor may be reasonably pertinent if it is one which, because of the matter with which it deals, logically would have commended itself to an inventor’s attention in considering his or her invention as a whole.<

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/
Primary Examiner, Art Unit 1792